**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of the claims in the application.

**Listing of Claims**

1. (Currently amended) A system for detecting digital symbols carried in a received optical signal, comprising:
a functional element operative to receive a stream of samples ~~of~~ sampled from an electrical signal derived from the received optical signal and to evaluate a non-linear function of each received sample, thereby to produce a stream of processed samples;
a detector operative to render decisions about individual symbols present in the received optical signal on the basis of the stream of processed samples.

2. (Original) The system defined in claim 1, wherein the non-linear function is substantially the square root.

3. (Previously presented) The system defined in claim 2, wherein the detector being operative to render decisions about individual symbols present in the received optical signal comprises the detector being operative to render decisions about individual symbols present in the received optical signal on the basis of a computed similarity between corresponding ones of the processed samples and each of a plurality of thresholds associated with possible transmitted symbol patterns.

4. (Previously presented)The system defined in claim 3, wherein each of the thresholds is associated with a respective one of the possible transmitted symbol patterns and wherein the detector being operative to render decisions about symbols present in the received optical signal comprises a program element for execution by a computing device to implement a method comprising the steps of, for each particular one of the processed samples:
a)determining which possible transmitted symbol pattern has an associated threshold to which the particular processed sample is most similar;
b)rendering a decision about an individual symbol present in the received optical signal on the basis of the symbol pattern determined at step a).

5. (Original) The system defined in claim 4, wherein the particular processed sample is more similar to a first one of the thresholds than to a second one of the thresholds when the absolute value of the difference between the particular processed sample and the first one of the thresholds is less than the absolute value of the difference between the particular processed sample and the second one of the thresholds.

6. (Original) The system defined in claim 5, wherein the number of symbol patterns in the plurality of possible transmitted symbol patterns is 2 to the power N for an integer N at least as large as one, and wherein each of the possible transmitted symbol patterns is a unique N-bit pattern.

7. (Original) The system defined in claim 5, wherein the number of symbol patterns in the plurality of possible transmitted symbol patterns is 2 to the power N for an integer N greater than one, and wherein each of the possible transmitted symbol patterns is a unique N-bit pattern.

8. (Previously presented) The system defined in claim 7, wherein the method implemented by the program element for execution by the computing device comprises rendering a decision about an individual symbol present in the received optical signal comprises selecting, as the individual symbol present in the received optical signal, the bit value of a predetermined bit position within the N bits of the symbol pattern determined at step a).

9. (Previously presented) The system defined in claim 8, wherein the method implemented by the program element for execution by the computing device comprises the predetermined bit position being located at an extremity of the symbol pattern determined at step a).

10. (Previously presented) The system defined in claim 8, wherein the method implemented by the program element for execution by the computing device comprises the predetermined bit position being located between extremities of the symbol pattern determined at step a).

11. (Original) The system defined in claim 3, further comprising a photodetection unit operative to derive the electrical signal from the received optical signal.

12. (Original) The system defined in claim 11, wherein the electrical signal derived from the received optical signal has a current proportional to the power of the received optical signal.

13. (Original) The system defined in claim 11, wherein the electrical signal derived from the received optical signal has a voltage proportional to the power of the received optical signal.

14. (Original) The system defined in claim 11, wherein the photodetection unit comprises an optical filter operative to filter the received optical signal prior to deriving the electrical signal from the received optical signal.

15. (Original) The system defined in claim 11, further comprising: a sampler operative to sample the electrical signal derived from the received optical signal, thereby to produce the samples of the electrical signal derived from the received optical signal.

16. (Original) The system defined in claim 15, further comprising an electrical filter operative to electrically filter the electrical signal derived from the received optical signal prior to sampling.

17. (Currently amended) A method of detecting digital symbols carried in a received optical signal, comprising :
receiving a stream of samples ~~of~~ sampled from an electrical signal derived from the received optical signal;
evaluating a non-linear function of each received sample, thereby to produce a stream of processed samples;
rendering decisions about individual symbols present in the received optical signal on the basis of the stream of processed samples.

18. (Original) The method defined in claim 17, wherein the non-linear function is substantially the square root.

19. (Original) The method defined in claim 18, wherein rendering decisions about individual symbols present in the received optical signal comprises rendering decisions about individual

symbols present in the received optical signal on the basis of a computed similarity between corresponding ones of the processed samples and each of a plurality of thresholds associated with possible transmitted symbol patterns

20. (Original) The method defined in claim 19, wherein each of the thresholds is associated with a respective one of the possible transmitted symbol patterns and wherein rendering decisions about symbols present in the received optical signal comprises, for each particular one of the processed samples:
a)determining which possible transmitted symbol pattern has an associated threshold to which the particular processed sample is most similar;
b)rendering a decision about an individual symbol present in the received optical signal on the basis of the symbol pattern determined at step a).

21. (Original) The method defined in claim 20, wherein the particular processed sample is more similar to a first one of the thresholds than to a second one of the thresholds when the absolute value of the difference between the particular processed sample and the first one of the thresholds is less than the absolute value of the difference between the particular processed sample and the second one of the thresholds.

22. (Original) The method defined in claim 21, wherein the number of symbol patterns in the plurality of possible transmitted symbol patterns is 2 to the power N for an integer N at least as large as one, and wherein each of the possible transmitted symbol patterns is a unique N-bit pattern.

23. (Original) The method defined in claim 21, wherein the number of symbol patterns in the plurality of possible transmitted symbol patterns is 2 to the power N for an integer N greater than one, and wherein each of the possible transmitted symbol patterns is a unique N-bit pattern.

24. (Original) The method defined in claim 23, wherein rendering a decision about an individual symbol present in the received optical signal comprises selecting, as the individual symbol present in the received optical signal, the bit value of a predetermined bit position within the N bits of the symbol pattern determined at step a).

25. (Original) The method defined in claim 24, wherein the predetermined bit position is located at an extremity of the symbol pattern determined at step a).

26. (Original) The method defined in claim 24, wherein the predetermined bit position is located between extremities of the symbol pattern determined at step a).

27. (Original) The method defined in claim 17, further comprising sampling the electrical signal derived from the received optical signal, thereby to produce the samples of the electrical signal derived from the received optical signal.

28. (Currently amended) A method of training a symbol detector, comprising:
transmitting an optical training signal along a channel, the transmitted optical training signal carrying a sequence of symbols arranged in transmitted symbol patterns;
receiving the optical training signal;
evaluating a non-linear function of samples ~~of~~ sampled from a received electrical training signal derived from the received optical training signal, thereby to produce processed samples of the received electrical training signal;
for each processed sample of the received electrical training signal:
a)identifying the transmitted symbol pattern within which said processed sample occupies a predetermined bit position;
b)storing a feature of said processed sample as an indication of the identified symbol pattern.

29. (Previously presented) The method defined in claim 28, wherein evaluating a non-linear function comprises evaluating substantially the square root.

30. (Original) The method defined in claim 29, wherein the transmitted symbol patterns in the sequence of symbols carried in the optical training signal comprise 2 to the power N symbol patterns of N bits per symbol pattern, where N is an integer greater than one.

31. (Original) The method defined in claim 30, wherein successive transmitted symbol patterns in the sequence of symbols carried in the optical training signal are overlapping.

32. (Original) The method defined in claim 31, wherein the sequence of symbols carried in the optical training signal is a pseudo-random noise (PN) sequence.

33. (Original) The method defined in claim 32, wherein identifying comprises identifying the transmitted symbol pattern that was transmitted at a time in the past corresponding to the time it would take for a transmitted symbol to appear as a processed sample upon transmission.

34. (Original) The method defined in claim 33, wherein identifying comprises detecting a burst and identifying a transmitted symbol pattern known to occur after the burst.

35. (Original) The method defined in claim 30, wherein storing a feature of said processed sample as an indication of the identified symbol pattern comprises storing the value of the sample as a threshold associated with the identified symbol pattern.

36. (Currently amended) A computer-readable storage medium containing a program element for execution by a computing device to implement a symbol detection system for detecting digital symbols carried in a received optical signal, the symbol detection system comprising:
a functional element operative to receive a stream of samples ~~of~~ sampled from an electrical signal derived from the received optical signal and to evaluate a non-linear function of each received sample, thereby to produce a stream of processed samples; and
a detector operative to render decisions about individual symbols present in the received optical signal on the basis of the stream of processed samples.